International Journal of Educational
Science and Research (IJESR)
ISSN(P): 2249-6947; ISSN(E): 2249-8052
Vol. 5, Issue 1, Feb 2015, 15-22

APPLICATION OF VIDEO TAPED INSTRUCTIONAL APPROACH FOR ACOUISITION OF SLASHING AND RAKING SKILLS IN PRACTICAL AGRICULTURAL SCIENCE

OFOEGBU T. O[1], UCHE D. ASOGWA[2] & MADU BAH[3]

Department of Arts Education, University of Nigeria, Nsukka, Enugu, Nigeria

ABSTRACT

The study investigated the application of video-taped instruction on students' acquisition of slashing and raking skills in practical Agricultural Science in Secondary schools. Quasi experimental research design was adopted for the study because there was no randomization. The sample consisted of 80 students from two public secondary schools in Fika Local Government Area of Yobe State, Nigeria. Two research questions and two null hypotheses tested at 0.05 level of significance guided the study. The instruments used for data collection were Rating Scale Form (RSF) and Practical Agricultural Achievement Test (PAAT). Data Analysis was done using mean and Analysis of Covariance (ANCOVA). The results indicated that the students taught slashing and raking skills with video-taped instructional package performed significantly better than their counterparts taught the same topics using conventional approach among others. Based on the findings of the study, it was recommended among others that video-tape as an instructional procedure should be applied to augment practical work for skill acquisition in practical agriculture in secondary schools.

KEYWORDS: Skill Acquisition, Slashing, Raking, Practical Agricultural Science

INTRODUCTION

Agriculture is the mainstay of economic growth and development of many developing countries including Nigeria. Livinus (2008) defined Agriculture as the human activity of cultivating crops and plantations for production of food and goods such as fibers, biofuels and animal feed. Osinem (2008) viewed agriculture as a science and systems which involve the cultivation of crops and rearing of animals for man's use. The science and systems of crop cultivation can be achieved through agricultural education.

Today, about 60 percent of the Nigerian population is employed in agriculture in one form or the other (Alkali, 2010). This fact has influenced the educational policy and objectives of the country. The policy and objectives are tailored towards self-sufficiency in agricultural productivity. In order to achieve this policy objective, agricultural science has been made a compulsory subject at the senior secondary school level. Federal Ministry of Education (FME) (2007) stated that the objectives of agricultural Science at the Senior Secondary School level are: to stimulate and sustain students' interest in agriculture, to enable students acquire useful knowledge and practical skills in agriculture, to prepare students for studies in agriculture, and to prepare students for occupations in agriculture. These objectives glaringly stressed the importance of agricultural Science in national development.

In line with the objectives, the content of the Senior Secondary School agricultural science consists of major concepts such as production, protection and economics. Allied topics to these concepts were divided into six units namely: crop production, animal production, agricultural ecology and systems, agricultural engineering, agricultural economics and extension. It should be noted that there is continuity from Junior Secondary School (JSS) to Senior Secondary School

(SSS) programmes in a way that concepts introduced at the JSS are broadly treated at the SSS level to produce articulated development of concepts that foster learning and comprehension by students. Uko-Aviomoh, Okoh and Omatseye (2007) stated that the objectives march the curriculum content and its arrangement and should be able to impart the needed skills on the learners when they are taught with appropriate media and methodology

The attainment of these objectives as laudable as they seem to be might not be realistic with the current traditional approach of teaching and learning in operation. Alkali (2010) said that with the current approach of teaching and learning which consists mainly of lecture method for example; only 3% of those who were trained in agricultural institutions take to agriculture after leaving school. He attributes this to ill preparation of the products whose training does not equip them to acquire useful knowledge and practical skills in agriculture. Shimave (2007) noted that most secondary schools do not have school farms, and where they exist at all, they fail to meet the standard and are thus ill-prepared to achieve what school farms are set for. Olaniyan and Ojo (2008) reported that the increase in students' enrolment in Nigerian secondary schools these days has created large classes that make it difficult for a single teacher to manage the practical aspects. Again teachers use inappropriate instructional materials to teach agricultural concept or to augment the school farms for acquisition of skills. The graduates produced from such institutions cannot effectively demonstrate the basic skills they ought to possess after graduation and cannot practice food production effectively at the required level. All these create worries to teachers and other stake holders in education.

It was observed that instead of producing highly motivated and highly skilled farmers, the system produces graduates who love white collar jobs and lack essential farming skills. As a result of these inadequacies, the objective of National Policy on Education (FGN 2007) of having trained young farmers and other skilled personnel who will be enterprising and self-reliant is defeated. Samuel (2012) commented that students who participated in nurturing school farms are bound to appreciate the subject (agriculture) more and even become stakeholders in agriculture. In secondary schools in particular, the familiarization of students with up-to-date methods for improved sustainable production of food that are applicable to their homesteads or farms is a potentially powerful tool for improving the household food security (Food and Agriculture Organization (F. A. O) 2012). Acquisition of agricultural science skills could be achieved through the use of proper teaching methods and utilization of appropriate instructional materials. This calls for a shift in the instructional delivery

Many researchers Aroh (2006), Isiaka (2007) had stated that in the classroom, learning could be made easier through the use of instructional materials. They facilitate retention of what is learnt; stimulates physical and mental activity of both students and teachers. Furthermore, it simplifies and provides a cognitive bridge between abstraction and reality to students. Again it helps students to acquire skills, scientific attitude and creativity. (Ehimere, Bonjoru, & Tsojon 2010).

Despite the potentials of instructional media some agricultural science teachers are still fond of using conventional methods in teaching agriculture in secondary schools. These approaches include but not limited to lecture method, discussion method and classroom demonstration methods which are teacher dominated. Aroh (2006) reported that in conventional method, teacher communicates ideas to learners by direct verbal discourse, sometimes called talk and chalk method. The use of lecture method which floods Nigerian classrooms has been severally and severely criticized by scholars because it is boring, ineffective and makes learners passive to learning hence unable to acquire needed skills. The implication of this is that learners become discouraged and passive. Consequently the need for better styles of lesson delivery that will improve skill acquisition is advocated. One of the approaches is through technology application.

Technology has moved into the classroom, and it is now difficult to talk of achievement and attitude to learning without making mention of it. The use of technology makes learning easy, real and practical, as it motivates learners, sustains interest and improves attitude to learning Isiaka (2007). Thus, it has become expedient therefore to integrate technological educational resources that can motivate the interest of the students and consequently improve their performance.

The poor performance of students in internal and external examinations in Agricultural Science calls for a careful assessment of the teaching methods and media adopted by the teachers. Okoro, (2007) stated that if measurement procedures reveal that students have not fully understood what they were taught; the fault could be with the teaching methods and media adopted. The West African Examination Council (W.A.E.C) chief examiners reports (2010) noted that inadequate exposure to practical agriculture affect students' performance in practical agriculture. Thus, candidates performance bothering on farm power, physical property of soil, crop improvement and poultry production was below average. The chief examiners advised teachers to make the teaching and learning of agricultural principles to be more deductive, analytical and problem solving rather than the traditional methods of rote learning and verbatim responses which no longer have place in modern test evaluation. Therefore, to provide a remedy to this educational hazard, an instructional delivery mode that activates more sensors could be a panacea. One of such is video presentation. The use of video in teaching and learning is occupying centre stage in some classrooms. Video is an electronic device which provides aural and visual stimuli as well as motion and could be used in teaching subjects requiring skill acquisition like agricultural science.

Agricultural science is a practical oriented subject and therefore requires practical activities and experiences in the field. Practical can be considered as a physical activity an individual engages in, in order to master a specific skill or to attend a specific objective. Aggarwal (2007) viewed practical work as a type of work aimed at providing direct experience to students and equally enable the students to fully understand principles, phenomena and processes by investigation. In Agricultural Science it involves the training of students to work with their hands as well as their minds for the promotion of better agricultural processes. Some of these practical skills to be acquired in agricultural science are slashing and raking which are basic steps in land preparation.

Slashing is the process of cutting down grasses, weeds, shrubs and debris in order to provide a grass free land for agricultural production. The slashed grasses are allowed to dry (Mamudo 2012). According to Peter (2012), raking is the act of moving farmer's feet; gather leaves straight back and move with the rake as he/she walk toward the back to make heaps. These farm operations cannot be practically learnt through the use of traditional approaches. Many teachers use traditional methods due to problems like lack of school farm, large class size etc. Some media like video can be used to demonstrate the process of skill development and facilitate practical skills acquisition. Video presentation ensures that the content or skill to be learnt is organized in sequence, finished and prepackaged on a tape for use in future. It allows for the use of varieties of designs, variables such as the manipulation of instructional media which include, replay, mute and pause, close-up, questioning and practice to facilitate learning. Isiaka (2007) stated that video could enhance comprehension and retention. Real life activities like illustration, demonstration and observation of specimens in agriculture and the environment are brought to the learners in the classroom in a neat and exciting package. Learning experiences that would have cost much (in terms of field trips) could be recorded with a video camera and shown on a television through VHS or VCD at a reduced cost. Environmental issues such as effect of erosion, bush burning, pesticides

poisoning, forest degradation, global warming and climate change could be taught through video. Video- taped instructions in teaching and learning of agricultural science may enhance students' performance especially where the class is over populated (Isiaka 2007). It has become highly imperative therefore, to investigate the application of video-taped instruction on students acquisition of slashing and raking skills in practical agriculture.

This research is anchored on constructivist theory. Constructivists posit that when learners access information through their senses, the construction of new knowledge comes from an interaction between their existing knowledge and new experiences and ideas with which they come in contact in the natural world and their culture (Richardson 2003).

Research Questions

Two research questions guided the study

- What is the effect of video-taped instruction on students' acquisition of slashing skill?
- What are the effects of video-taped instruction on students' acquisition of raking skill?

Hypotheses

Two null hypotheses were formulated to guide the study and were tested at 0.05 level of significance.

$H0_1$ There is no significant difference in the acquisition of slashing skill between students taught with videotaped instruction and their counterparts taught the same topic using lecture method approach.

H_{02} There is no significant difference in the acquisition of raking skill between students taught with videotaped instruction and their counterparts taught the same topic using lecture method approach.

METHODOLOGY

The study adopted quasi-experimental research design. Specifically, the study adopted non-randomized pretest posttest control group design. The design was considered appropriate because intact classes were used. A sample size of 80 SS2 students of Zadawa senior secondary school, Fika Yobe state was used. Two intact classes were sampled by simple random sampling. One intact class was randomly assigned to the experimental group while another intact class was randomly assigned to control group.

The experimental group was taught slashing and raking using video-taped instruction showing various skills involved. The control group was taught slashing and raking using lecture method of explanation and drawing of farm implements. Practical Agricultural Achievement Test (PAAT) consisting of ten (10) practical agricultural science test items on identification of farm tools, handling of farm tools, and manipulation of the tools and the performance of the action/skill was used for data collection. Each question has two marks. A four-point Rating Scale Form (RSF) was used to rate the performance of the students on the acquisition of slashing and raking skills. The RSF was graded as follows: Excellent = 4points, Average =3points, Below Average = 2points, None = 1. The skills involved include; identification of the implements, correct holding of the implements and patterns of utilization of the implements. The instruments (PAAT and RSF) were designed by the researcher for the two groups. They were validated by two experts from Agricultural Education and an expert from Educational Technology. A reliability co-efficient of 0.72 was obtained for PAAT using Spearman-Brown prophecy formula. Prior to the commencement of the study, a pretest was administered to the groups and after the treatment for four weeks; a posttest was administered by the school regular agricultural science

teachers under the supervision of the researchers. Mean was used to answer the research questions while the analysis of covariance (ANCOVA) was used to test the hypotheses.

RESULTS

The results of the study are presented according to the research questions and hypotheses.

Research Question One: What is the effect of video-taped instruction on students' acquisition of slashing skill?

Table 1: Mean Scores of Students Taught the Acquisition of Slashing Skill with Videotaped Instruction and Those Taught with Lecture Method

Group N	Pretest	Posttest	Mean Gain
VTI on slashing skill 40 Mean Std Deviation	4.3750 2.20358	6.6750 2.15296	2.3000
Lecture on slashing skill 40 Mean Std Deviation	3.4500 2.01214	4.9750 2.15416	1.5250

Table one shows that students taught with videotaped instruction have higher Posttest (6.69) mean than those taught with lecture method (4.98). Hence the mean gain for the video-taped group is 2. 325 while that of lecture method group is 1.325. .

Research Question Two: What is the effect of video-taped instruction on students' acquisition of raking skill?

Table 2: Mean Scores of Students Taught the Acquisition of Raking Skill with Videotaped Instruction and Those Taught with Lecture Method

Group N	Pretest	Posttest	Mean Gain
VTI on Raking skill 40 Mean Std Deviation	4.0750 2.05348	6.400 2.22803	3.3250
Lecture on raking skill 40 Mean Std Deviation	3.6500 1.98132	4.9750 2.00624	1.3250

Table 2 shows that students taught the acquisition of raking skill with videotaped instruction have higher Posttest mean (6.40) than those taught with lecture method with posttest mean of 4.98 and mean gains of 3.33 and 1.33 respectively.

H01 There is no significant difference in the acquisition of slashing skill between students taught with videotaped instruction and their counterparts taught the same topic using lecture method approach.

Table 3: Analysis of Co-Variance (ANCOVA) of Students' Acquisition of Slashing Skills by Method

Source	Type 111 Sum of Squares	Df	Mean Square	F	Sig	Decision
Corrected Model	97.161a	4	24.290	5.651	.000	Significant
Intercept	417.123	1	417.123	97.039	.000	
Pretest	17 658	1	17.658	4.108	.046	
Method	47.234	1	47.234	10.988	.001	
Error	322.389	75	4.299			
Total	3134.000	80				
Corrected Total	419.550	79				

Table three shows that the F value (10. 988) is significant at .001 probability level. This shows that there is a significant difference. Hence the hypothesis is rejected.

H_{02}: There is no significant difference in the acquisition of raking skill between students taught with videotaped instruction and their counterparts taught the same topic using lecture method approach.

Table 4: ANCOVA of Students' Acquisition of Raking Skills by Method

Source	Type 111 Sum of Squares	Df	Mean Square	F	Sig	Decision
Corrected Model	70.375a	4	17.594			
Intercept	512.155	1	512.155	4.113	.005	
Pretest	.824	1	.824	119.732	.000	
Group	46.615	1	46.615	.193	.662	Significant
Error	320.812	75	4.277	10.898	.001	
Total	2979.000	80				
Corrected Total	391.187	79				

Table four shows that the F value is 10.898 and it is significant at .001 level of probability. This shows that there is a significant difference. Hence the hypothesis is rejected

DISCUSSIONS

The study shows that students taught acquisition of slashing and raking skills with videotaped instruction performed better than those taught with lecture method. The ANCOVA result also indicated that the difference between the performances of the two groups is significant. This is in line with the findings of Ehimere, Bonjoru & Tsojon (2010) that instructional materials help students to develop skills, scientific attitude and creativity. It also supports the findings of Isiaka (2007) that the use of video could enhance comprehension and retention. Again, real life activities like illustration, demonstration and specimens in agriculture and the environment are brought to the learners in the classroom in a neat and exciting package using video-tapes.

IMPLICATIONS

The implications of the study are that videotaped instructional package is effective for imparting of skill acquisition in agricultural science and therefore should be encouraged. Hence problem created by lack of school farms in some urban schools or management of large classes and shortfall in farm implements can be augmented using video-taped instruction.

CONCLUSIONS

Practical agricultural science is one of the secondary school subjects that can instill entrepreneurship tendency in youths if properly taught. Slashing and raking are among the basic steps in land preparation. Teaching practical agricultural science well, involves exposing the learners to the actual experience which is generally gained in the farm. However in the absence of direct farm experience, acquisition of some of the skills can be gained through the use of videotaped instruction.

RECOMMENDATIONS

- Video-tape as instructional procedure should be used when teaching practical agriculture in secondary schools.
- Government should assist schools to acquire necessary video equipment and standby generator sets.

REFERENCES

1. Aggarwal J. C. (2007). *Essentials of Educational Technology*: Innovation in teaching-Learning; 2th edition. Delhi.
2. Alkali, M. (2010). T*he Case of Agriculture as the only Saviour to Nigeria's Deing Economy.* Retrieved on 05/02/2012 from <hhttp://www.gamji.com/articles4000/NEWS.htm>
3. Aroh D. C. (2006). Effects of Video-Taped Instruction on Secondary School Students' Achievement and Interest in Mathematics. *Unpublished M. Ed Thesis. University of Nigeria, Nsukka.*
4. Ehimere, G. A, Bonjoru, F. H, & Tsojon, J. D. (2010). Improvisation of Instructional Materials in Teaching Agricultural Science in Secondary Schools of Taraba State: A Tool for Re-Branding Nigeria. Sahel Journal of Teacher Education, 2(1), pp, 24-27.
5. F. A. O, (2012). Teaching Vocational Agriculture in Schools: National Open University of Nigeria School of Science and Technology. 14/16 Ahmadu Bello Way, P.M.B. 80067, VICTORIA ISLAND, LAGOS. (2009). Agriculture in sub-Saharan Africa: policy news progress reports. Retrieved on 11/02/2012 from http://www.one.org/c/international/progressreports/1604/s
6. Federal Ministry of Education, (2007). National Policy on Education. Printing Division, Lagos.
7. Federal Republic of Nigeria (FRN, 2004), National policy on education (4^{th} edition). Lagos: NERDE Press.
8. Isiaka, B. (2007). Effectiveness of video as an instructional medium in teaching rural children agricultural and environmental sciences *International Journal of Education and Development using Information and Communication Technology. IJEDICT),* (3), (3), pp. 105-114.
9. Livinus O. 2008). International journal of scientific research in education, agricultural Land Reserve: DOAG: Definition of Agriculture. Retrieved on 18/01/2012 from <http//www.a/c.gov.bc.ca/alr/what_is_ag_land.htm>
10. Mabekoje, O. O. (2006). Effects of Cooperative and Competitive Goal Structures on Secondary Students' Academic Achievement in an Aspect of English Language in Ogun State. An unpublished Advanced Research Seminar on Language and Language Education. Teacher Education Department, University of Ibadan.
11. Mamudo, Y. Y. (2012). Recommended (Protective) Practices for Major Cereals and Legumes. A Paper Presented at the Monthly Technology Review Meeting of Yobe State Agricultural Development Programme (ADP) Potiskum, Yobe State, Nigeria.
12. Nicodemus, O. A. (2009). Teaching Vocational Agriculture in Schools: University of Agriculture, Makurdi, Benue State. Retrieved on 13/11/2011 from <http://en.wikipedia.org/wiki/university_of_Agriculture_Makurdi>
13. Ogbondah, L. (2008). An Appraisal of Instructional Materials Used to Educate Migrant Fishermen's Children in Rivers State, Nigeria. International Journal of Scientific Research in Education, Vol. 1(1), 13-25. Retrieved on 12/9/2011 from < http://www.ijsre.com>
14. Okoro, O. M. (2007). Programme Evaluation in Education. Pacihic Correspondance College & Press Ltd. Pacific House, klm. 3 Mike Ajeobo Road, P.O.Box 21. Uruowulu-Obosi, Anambra state, Nigeria. Pp. 46.

15. Olaniyan D. A. & Ojo B. L, (2008). Challenges against Implementation of Introductory Technology Curriculum in Nigerian Junior Secondary Schools: European Journal of Scientific Research. ISSN 1450-216x vol. 24,(1), pp. 112-118 Retrieved on 05/02/2012 from < http://www.europeanjournals. Com/ejsr.htm>

16. Osinem E. C. (2008). Managing Agricultural Education and Training: Resources, Principles & Methods. ISBN: 978-8108-99-7. No: 104 Adbani Road, Enugu, Nigeria.

17. Peter, (2012). Cultural Practices for the Production of Cereal Crops in Yobe state. A Paper Presented at the Monthly Technology Review Meeting of Yobe State Agricultural Development Programme (ADP) Potiskum, Yobe State, Ngeria.

18. Richardson, V. (2003). Constructivist Pedagogy. Teachers College Record, 105,1623-1640

19. Samuel, I. (2012). Cathing Farmers Young: Stimulating Youth Interest in Agriculture. Retrieved on 17/08/2012 from http://poeticfarmer.wordpress.com/tag/practical-

20. Shimave, A. G. (2007), An Evaluation of the Performance of Secondary Farms in Taraba state. An unpublish M. Ed Thesis. University of Nigeria Nsukka.

21. The chief examiners report WAEC, (2010).

22. Uko-Aviomoh, E. E.; Okoh, E. & Omatseye, B. O. J. (2007). Universal Basic Education (UBE) in Nigeria: Education, v127 n4 p558-568 Sum 2007; ISSN-0013-1172 Retrieved on 13/02/2012 from http://www.projectinnovation.biz/education.html